REMARKS

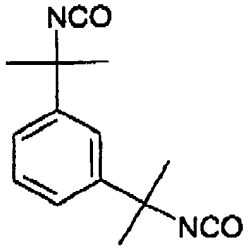
Claims 1-12 are currently pending for consideration. All stand rejected under 35 USC 112, second paragraph. Applicant respectfully traverses the rejection as further detailed below.

The Office Action maintains the rejection from the prior Office Action which stated that it is unclear what applicants intend the connector base to be. Specifically, the prior Office Action contends that although claim 2 recites that the compatible resin in the connector base (of claim 1) may consist of a polyisocyanate, it is unclear that the specification discloses a polyisocyanate that is also a resin. The Office Action also maintains the rejection contending that claims 1 and 4 are inconsistent with respect to the compatible resin, as claim 1 requires a compatible resin and claim 4 indicates that it can be omitted.

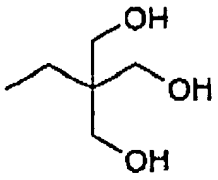
Applicant thanks Examiner Cain for extending the courtesy of a telephonic interview with Applicant's representative on July 13, 2006. Applicant's representative discussed that the specification does disclose a polyisocyanate resin and that the claims 1 and claims 4 are not inconsistent. A Summary of the Interview and the issues raised by Applicant's representative are incorporated in the detailed remarks below.

Regarding the rejection based on claims 1 and 2, Applicant respectfully submits that the reaction product of 3 moles of m-tetramethylxylene diisocyanate (TMXDI) with 1 mole of trimethylol propane (TMP) (as disclosed at page 9, lines 6-19) would result in a resin. In the reaction of TMXDI and TMP, the isocyanate groups react with hydroxyl groups to form urethane groups.

Below is a representation of the chemical formulas of TMXDI and TMP.

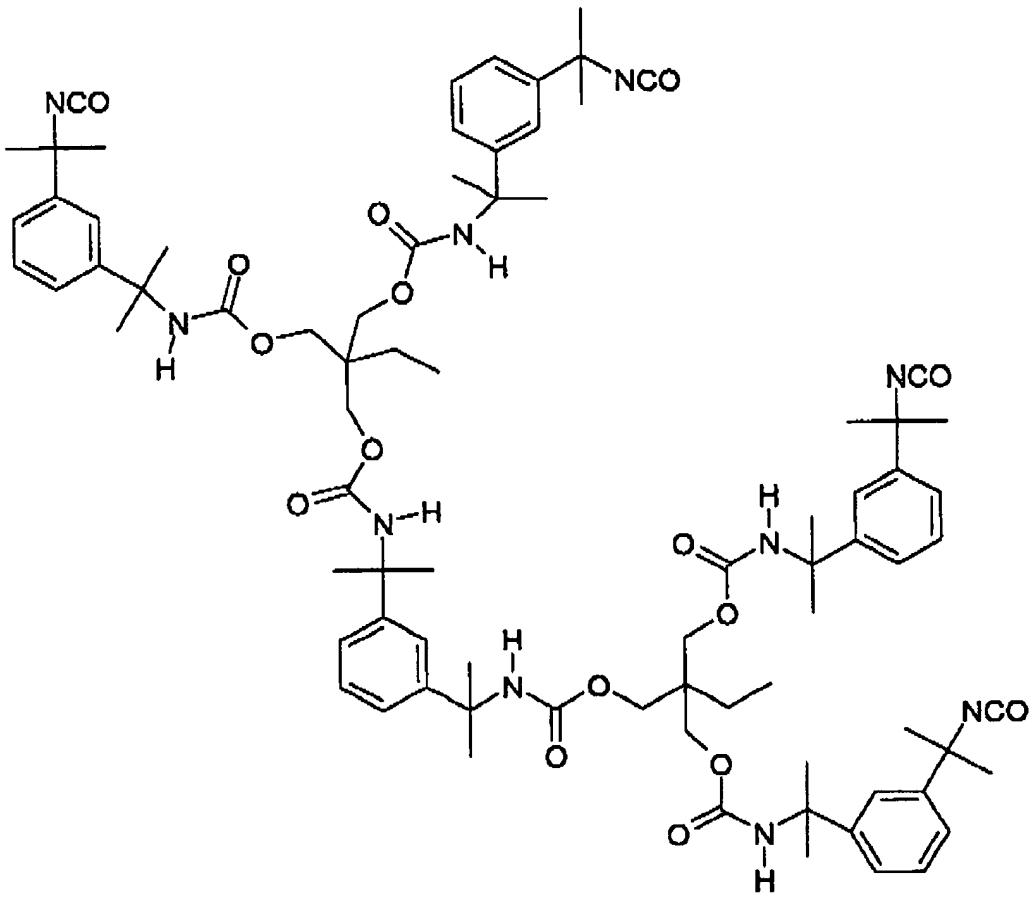


TMXDI



TMP

A review of the formulas reveals that the two isocyanate groups of TMXDI are equivalent and hence have the same reactivity. The same is the case for the three hydroxyl groups of TMP. Therefore, it is respectfully submitted that when 3 moles of TMXDI are reacted with 1 mole of TMP, the reaction of isocyanate groups and hydroxyl groups follows a statistical pattern. The reaction product will also contain species wherein both isocyanate groups of TMXDI have reacted with hydroxyl groups. As a result, the reaction product would include a mixture of individual species having varying molecular weight, such as free TMXDI, molecules formed from 1 molecule of TMP and 3 molecules of TMXDI (designated $(TMP)_1(TMXDI)_3$), and also $(TMP)_2(TMXDI)_5$, $(TMP)_3(TMXDI)_7$, $(TMP)_4(TMXDI)_9$, and so forth. Therefore, it is respectfully submitted that the reaction product inevitably comprises higher molecular weight species and therefore is a resin. As an illustration, the formula of $(TMP)_2(TMXDI)_5$ is included below:



In addition, the Examiner is directed to the attached technical information leaflet for the commercial product Cythane 3174. A review of the leaflet reveals that Cythane 3174 is a resin based on TMXDI and TMP (Title, Paragraph "Description"). Hence, the technical information leaflet confirms that the reaction product of tetramethylxylene diisocyanate (TMXDI) and trimethylol propane (TMP) is a resin.

The specification also discloses the reaction product of 3 moles of toluene diisocyanate with one mole of trimethylol propane (See page 9, lines 10-11). The Examiner is directed to the attached printout of a web page

(www.wmich.edu/ppse/inks/pp4.htm) which indicates that the reaction of toluene diisocyanate and trimethylol propane results in a network similar to an alkyd varnish, which is a resin. (See fourth paragraph of printout).

In view of the above, it is respectfully submitted that the specification discloses polyisocyanates that are resins. Accordingly, it is respectfully requested that the rejection based on claims 1 and 2 be withdrawn.

Regarding the rejection based on claims 1 and 4, it is respectfully submitted that the two claims are not inconsistent. Claim 1 includes at least one connector base. The connector base includes at least one resin compatible with the resins mentioned in the toner base (of claim 1). It is respectfully submitted that the "compatible resin" does not exclude and can be the same type of resin, as the resins mentioned for the toner base, or even an identical resin to the resins mentioned for the toner base.

Claim 4 recites the composition of **the combination of the toner base and the connector base** of claim 1. Therefore, in the case mentioned above where the "compatible resin" in the connector base is the same type of, or identical, resin as those mentioned for the toner base, and no other type of "compatible resin" is present in the connector base, it is respectfully submitted that **the combination (of toner base and connector base)** will contain 0% of a compatible resin, as recited in claim 4.

In view of the above, it is respectfully submitted that claims 1 and 4 are not inconsistent.

Accordingly, it is respectfully requested that the rejection based on claims 1 and 4 be withdrawn. The Examiner is invited to contact the undersigned to discuss the possibility of an Examiner's amendment to claim 4, if the Examiner believes it is necessary, in order to clarify the claim language.

In view of the comments above, Applicant respectfully requests withdrawal of the rejections under 35 USC 112, second paragraph, and allowance of the claims. The Examiner is invited to contact the undersigned at the telephone number below if thought helpful in the progress the case.

Respectfully submitted,

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CYTHANE®3174 aliphatic polyisocyanate resin

DESCRIPTION

CYTHANE 3174 aliphatic polyisocyanate resin is a tertiary hydrophobic crosslinker based on TMXDI® (META) aliphatic isocyanate TMP prepolymer.

CHARACTERISTICS

Ambient cure
Excellent durability
Non yellowing
Low acute toxicity
Non-pulmonary sensitizer

APPLICATION AREAS

High performance waterborne coatings
High solids formulations
OEM topcoats
OEM plastics
Automotive refinish
Industrial maintenance
Wood coatings
Electrodeposition coatings
Blocked, one-component coatings

TYPICAL PROPERTIES

Appearance	Clear, colorless to pale yellow, viscous liquid
Non-volatile, (% by weight)	73-75
NCO content (% by weight on solution)	10.2 ± 0.5
Residual TMXDI isocyanate (% by weight on solution)	1.5 max
Density (lbs/gal)	8.9
Specific gravity (16°C)	1.07
Equivalent weight (average)	412 ± 20
Flash point (°F)[1]	89
Solvent	Butyl acetate
Viscosity, 25°C (mPa•S, 25°C)	3,000 - 6,000

[1] Pensky-Martens Closed Cup

TWO-COMPONENT WATERBORNE COATINGS

One of the newest technological advancements in high performance polyurethane coatings is the development of waterborne two-component isocyanate systems, which reduce VOC emissions. One approach to formulating these water-borne coatings is to crosslink aqueous polyols with hydrophilically modified polyisocyanates, generally based on the isocyanurate trimer of primary isocyanate crosslinking agents. The problem with this approach is how to minimize the many possible secondary reactions.

CYTHANE 3174 aliphatic polyisocyanate resin can be an excellent choice for use in two-component waterborne polyurethane coatings. This resin is characterized by lower reactivity with water than that of the polyisocyanate resins currently used in two-component waterborne polyurethane coatings. Because of this attribute, water borne coatings with reactivity and film properties equivalent to those achieved with two-component solvent systems can be readily prepared with CYTHANE 3174 resin.

Two-component water-reducible coatings crosslinked with CYTHANE 3174 aliphatic polyisocyanate resin are characterized by smooth, high-gloss, blister-free films demonstrating good film performance at an NCO/-OH stoichiometric ratio of 1/1 – a ratio similar to that which is typical of two-component solvent systems. Additionally, the formulation is surfactant-free and low in VOC. UV stabilizers are easily incorporated, and long potlife can be expected.

SELECTION OF POLYOLS

CYTHANE 3174 polyisocyanate resin requires a modification of the polyol to a lower glass transition temperature to obtain optimum room temperature reactivity and film performance. Using CYTHANE 3174 resin as a direct replacement for other aliphatic polyisocyanate crosslinkers in existing formulations is likely to result in coatings with poor properties.

CYTEC

CYTEC INDUSTRIES INC.
Urethane Chemicals
Five Garret Mountain Plaza
West Paterson, NJ 07424-3360
973-357-3100
www.cytec.com

A water-dispersible acrylic polyol, CYTHANE® acrylic resin TAW 10-3, has been developed for use in two-component waterborne coatings. When formulated with CYTHANE 3174 resin, the resulting two-component water-dispersible polyurethane coating has a VOC of only 2.1 lb/gal and very good coatings performance.

This acrylic polyol, which contains both primary hydroxyl and carboxyl functional groups, is designed to act as the emulsifying agent for the hydrophobic crosslinker. Elimination of hydrophilic modification of the polyisocyanate crosslinker affords improved water resistance for coatings. The styrene-containing acrylic provides high, early, and final film hardness. The systems delivers two component water-dispersible polyurethane coatings with 6-8 hours potlife and excellent appearance using a stoichiometric ratio of isocyanate to hydroxyl.

SOLUBILITY

CYTHANE 3174 aliphatic polyisocyanate resin may be diluted with aromatic hydrocarbons, esters and ketone without precipitation or separation.

CATALYSIS

Catalysis is necessary for rapid ambient cure of all aliphatic polyisocyanates. We recommend the use of dibutyltin dilaurate (DBTDL) or dimethyltin dicarboxylate with CYTHANE 3174 resin. Generally, higher levels of catalyst will be necessary due to the tertiary nature of the isocyanate groups. The concentration of DBTDL depends on the structure and the type of coreactant resin used, but 0.5% levels by weight of total resin solids are typically used.

STORAGE

CYTHANE 3174 aliphatic polyisocyanate resin is sensitive to moisture and should be kept in tightly closed original containers to prevent contamination with moisture and air. If partially filled containers are stored, it is advisable to blanket the liquid surface with dry nitrogen before sealing.

HEALTH AND SAFETY INFORMATION

CYTHANE 3174 aliphatic polyisocyanate resin contains a flammable, volatile, organic solvent. The solvent vapor may be harmful if inhaled and may cause eye and skin irritation. Where a closed system is not used, good enclosure and local exhaust ventilation should be provided to minimize exposure. For detailed information, see Cytec Industries Inc. Material Safety Data Sheet Number 07956.

IMPORTANT NOTICE

The information and statements herein are believed to be reliable but are not to be construed as a warranty or representation for which we assume legal responsibility. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information or products referred to herein. NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE. Nothing herein is to be taken as permission, inducement or recommendation to practice any patented invention without a license.

TRADEMARK NOTICE

The ® indicates a Registered Trademark in the United States and the ™ or * indicates a Trademark in the United States. The mark may also be registered, the subject of an application for registration or a trademark in other countries.

CYTEC

- Asia/Pacific - Cytec Industries Pte. Ltd., Singapore, tel. 65-733-6788, fax. 65-735-7783
- Europe - Cytec Netherlands (CRP) B.V., Botlek, the Netherlands, tel. 31-181-296504, fax. 31-181-295401
- Latin America - Cytec do Brasil LTDA, Sao Paulo, tel. 55-11-5505-4588, fax. 55-11-5505-4565
- United States - Cytec Industries Inc., West Paterson, NJ, U.S.A., tel. 800-243-6874, fax. 800-365-5722

GLY. 4/01

Vehicles

Varnishes - The part of the ink in which the other materials (pigments, driers, waxes and modifiers) are dissolved or suspended. Drying oil varnishes are made by heating linseed, tung, castor, tall, soybean or safflower oil with alkyd, urethane and phenolic resins. These oils are converted to varnishes by heating. Alkyd Varnishes - Used for lithographic inks. Resin is made by reacting phthalic anhydride with glycerol.

Each phthalic anhydride can react with two glycerols and each glycerol can react with three anhydrides so that a cross-linked network is formed. This polymer is then reacted with the drying oil to modify it. (Soya oil may be used by heating unmodified).

Urethane varnishes are produced by reacting an isocyanate with an alcohol.

$$R\text{-}N{=}C{=}O + HOCH_2R' \rightarrow R\text{-}NH\text{-}COCH_2R'$$

An example with Toluene diisocyanate and trimethylol propane is shown in the book. This forms a network similar to the alkyd varnish. Phenolic Varnishes are formed from a phenol and formaldehyde.

A linear polymer is formed as opposed to network polymers above. A network can be obtained by reacting with rosin esters. For example, pentaerythritol ($C(CH_2OH)_4$) can be used to crosslink phenolic varnishes.

Soybean oil is used in sheetfed offset to replace up to 20% of more expensive vehicles. Heatset inks - specially fractionated hydrocarbon which evaporates in high velocity hot air dryers. Used for web offset with the soft hot ink film being set by cooling on a chill roll. UV curable inks are now used extensively in Flexo printing. They are also used for gravure, but are seldom used in web offset. UV curable inks contain low molecular weight oligomers, which cure upon irradiation with UV light in the presence of a photoinitiator.

The solvent/diluent is usually a hydrocarbon oil or vegetable oil. High boiling hydrocarbon solvents (heatset oils) are used in heatset inks for web offset printing. Heatset oils are dried rapidly by passing the web through a hot air dryer. Most of heatset oil evaporates in dryer. Quickset inks for sheetfed offset contain resin-solvent varnishes with some free oil. These set rapidly by adsorption of some of the oil onto the paper.

Cosolvent inks - A mixture of two or more solvents may be more powerful. May consist of an alcohol or glycol added to a hydrocarbon. Modifiers or Additives - Small amounts of materials added to inks. Include antiskinning agents, wax compounds, reducers and solvents. Antiskinning agents prevent skin formation in ink fountain and rollers. A good antiskinning agent increases skinning time without increasing drying time.

Methyl ethyl ketoxime, butylated hydroxy toluene (BHT) and hydroquinone are used as anti skinning agents. Waxes improve slip, mar-resistance and water repellency. May decrease gloss or interfere with dry trapping. Waxes used include polyethylene wax, poly-tetraflouroethylene, fatty

acid amides and a variety of hydrocarbon waxes including paraffin. Petroleum solvents are sometimes added to reduce tack.